

What is claimed is:

1. A fuel injection valve (1), in particular an injection valve for fuel injection systems of internal combustion engines, having a piezoelectric or magnetostrictive actuator (3) and a valve closing body (18) that can be activated by the actuator (3) via a valve needle (17) and that interacts with a valve seat surface (19) to produce a sealing seat, wherein

at least one damping element (25; 25a, 25b) is present having a solid that exhibits an almost static behavior at a high deformation rate and is elastically or plastically deformable at a low deformation rate.

2. The fuel injection valve as recited in Claim 1,

wherein

the solid of the damping element (25; 25a, 25b) is made of a plastic, in particular of uncured silicone rubber.

3. The fuel injection valve as recited in Claim 2,

wherein

the damping element (25; 25a, 25b) has a mechanical spring (27) whose damping behavior is superimposed on the damping behavior of the plastic.

4. The fuel injection valve as recited in any of Claims 1 to 3,

wherein

a first face (11) of the actuator (3) is supported against a shell (8), a prestress spring (5) rests with a first end (10) against an actuator housing cover (9) that terminates the shell (8) to produce an actuator housing (2), and a second face (12) of the actuator (3) and a second end (13) of the prestress spring (5) are supported against a center flange (14).

5. The fuel injection valve as recited in Claim 4,

wherein

the actuator housing (2) together with the actuator (3) contained therein and the prestress spring (5) has a constant length and is supported against a valve housing (23) with a first end

(39) via a first ring-shaped damping element (25a) and with a second end (40) via a second ring-shaped damping element (25b).

6. The fuel injection valve as recited in Claim 5,

wherein

the valve needle (17) is connected to the center flange (14) preferably via a welded seam (15).

7. The fuel injection valve as recited in any of Claims 1 to 3,

wherein

the actuator (3) is supported with a first face (11) against a flange (31) and with its second face (12) against a cover plate (30).

8. The fuel injection valve as recited in Claim 7,

wherein

the flange (31) is connected to a valve housing (23), preferably via a welded seam (32).

9. The fuel injection valve as recited in either of Claims 7 or 8,

wherein

an actuating body (16) supported at one end against the cover plate (30) is operably connected to the valve needle (17) via a valve shell (33).

10. The fuel injection valve as recited in Claim 9,

wherein

a readjusting spring (21) and a flange (34) of the valve needle (17) are enclosed in the valve shell (33), a damping element (25) being arranged between the valve needle flange (34) and a base plate (37) of the valve shell (33), and the readjusting spring (21) being clamped between the valve needle flange (34) and a cover plate (38) of the valve shell (33).

11. The fuel injection valve as recited in Claim 10,

wherein

a recess (35), through which the valve needle (17) extends, is located in the base plate (37) of the valve shell (33).

12. The fuel injection valve as recited in any of the previous Claims,

wherein

the actuator (3) is ring-shaped having a central recess (7) through which extends an actuating body (16) that acts on the valve needle (17).

12. The fuel injection valve as recited in any of the previous Claims,